BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

FILED
09/29/20
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C2009016

Peter W. Tucker,

Complainant,

vs.

Liberty Utilities d/b/a CalPeco Electric LLC (U933E)

Defendant.

Case (C.) _____

Exhibits

Part 6 of 7

COMPLAINANT	DEFENDANT
Peter W. Tucker 15825 Donnington Lane Truckee Ca 96161 T: 530-536-3837 E: peter@peterwtucker.com	Liberty Utilities d/b/a CalPeco Electric LLC (U933E) Attn: Daniel Marsh, Manager Rates and Regulatory Affairs 933 Eloise Avenue South Lake Tahoe, CA 96150 T: 562-299-5104 E: dan.marsh@libertyutilities.com

June 2019

Dear Liberty Utilities,

Attached please find the updated PDF with supporting documentation and load calculation for the application for the second solar array. I have not changed the load calculations over last years application, though note we are about 6 months behind where I thought we would be, due to the hydroponic salad wall taking longer to build than anticipated (see photos), and the budgetary need to buy a new car, which has put off purchasing and setting up the larger display aquarium until likely this winter. However, the first coral system has been running since October as planned, and all equipment used to calculate the loads into the future is the same, just a slightly more protracted timeline.

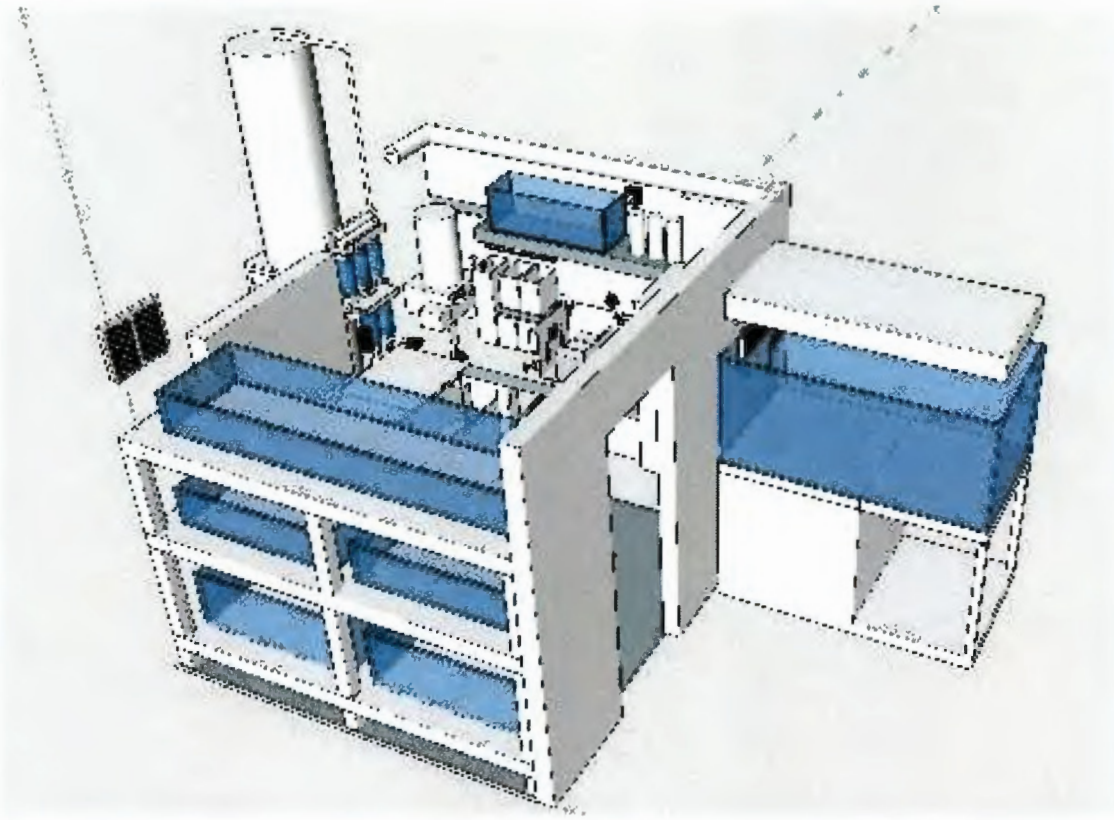
Please let me know if you have any questions.

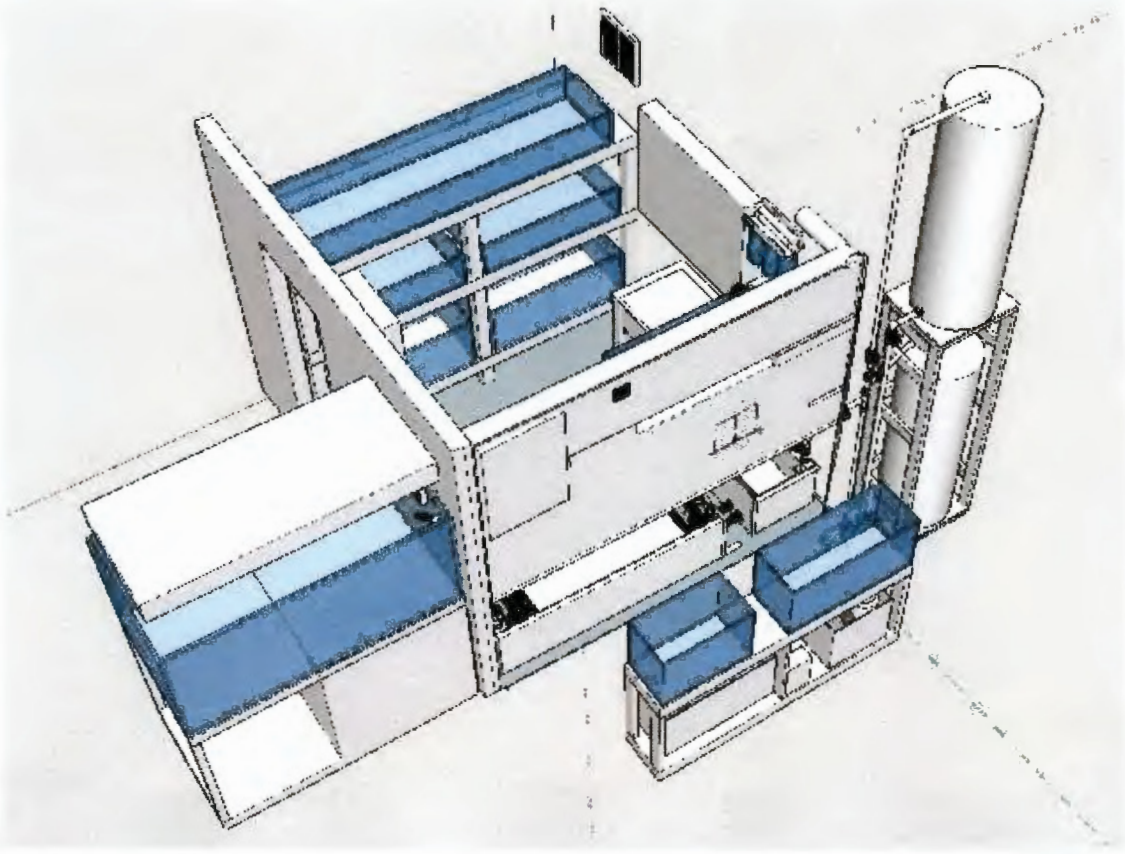
Thanks again!

Best,
Peter W. Tucker

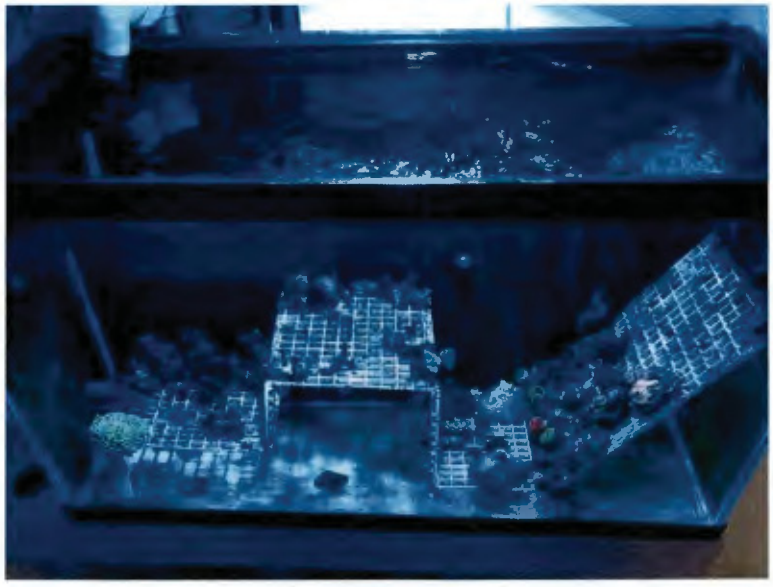
Outline of main display tank. Fish room door to left, quarantine system to right. Inset of system design, matching real-world perspective.

System Design, showing main display tank, coral aquaculture and filter room, quarantine sub-systems (photos following), and two-tier saltwater mixing station (photos following).





Coral Quarantine running and full of live coral, Quarantine fish system almost ready

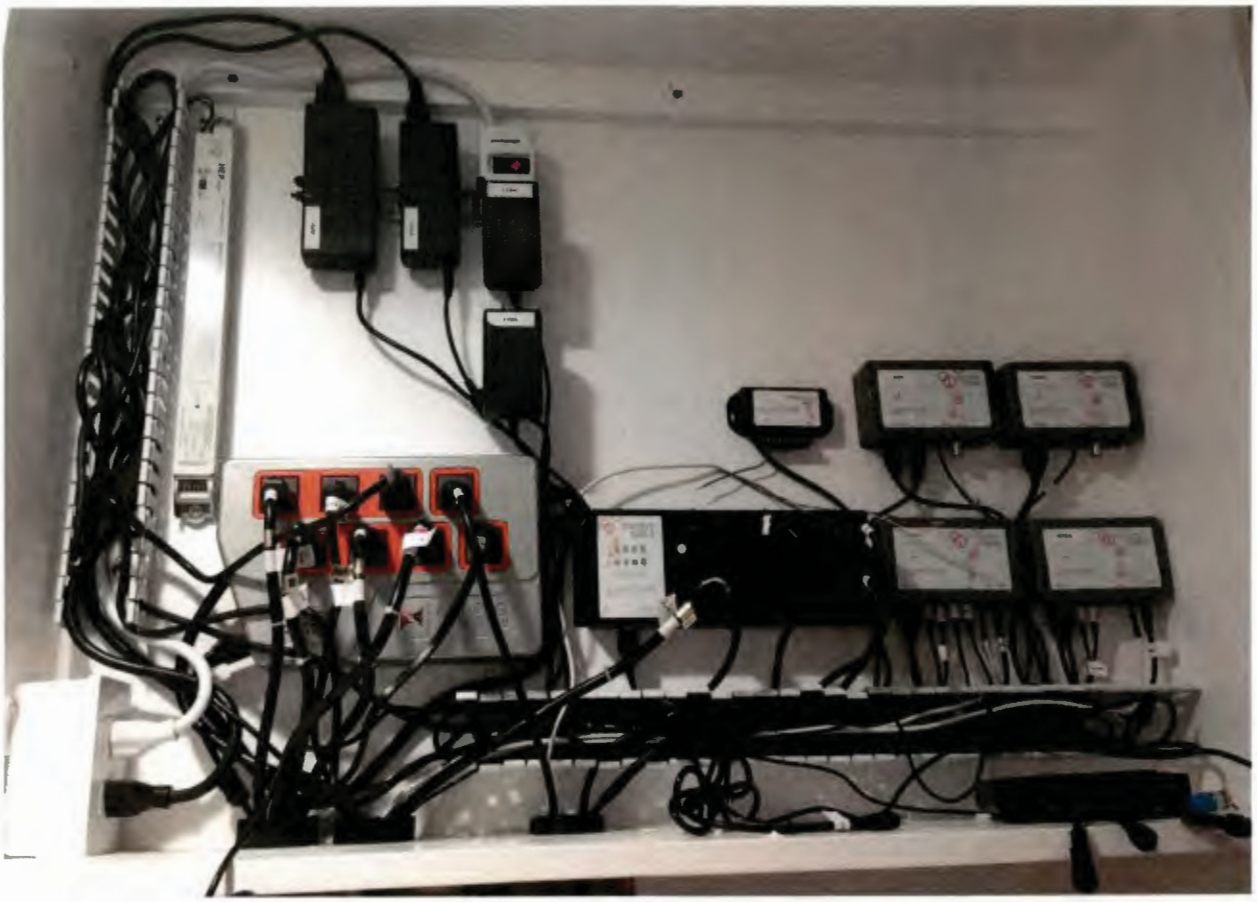


Aquarium system equipment already purchased and in-hand (and covered in drywall dust!)

Hydroponic salad wall, almost ready to put in service.

Seedling starts for salad wall. (left.) Custom LED light bars for salad wall, almost ready. (right).

Controllers and sensors for installed quarantine system. This is for two 30 gallon tanks, whereas the main system will be over 800 gallons in 6 tanks.



2018-2020 LOAD CALCULATION
15825 DONNINGTON LANE

Load Calculations are based on the aquarium system install, and when various components are going online - first a quarantine system (QT), then the main Display system (DT), then a coral propagation system (Frag).
All system equipment for years 2018 and 2019, except the main Display tank is already in-hand.

Each year's projected load, **in red**, *is added to the present 12 month baseline usage of 3016 KwH.*

2018	wattage	Power Factor	hours/day	KwH/Day	
Aquarium					
Coral QT Return (Sicce 3.0)	48	1	24	1.152	
Coral QT Circulation (Gyre 230)	25	1	24	0.6	
Coral QT Heater (Jager 200w)*	200	1	12	2.4	
Coral QT Lights (Kessil 360we)	75	1	11	0.825	
Coral QT Lights (2x24" T5)	24	1	11	0.264	
Coral QT Skimmer (Curve 5)	8	1	24	0.192	
Fish QT Return (Sicce 3.0)	48	1	24	1.152	
Fish QT Circulation (Hydor)	8	1	24	0.192	
Fish QT Heater (Jager 200w)*	200	1	12	2.4	
Fishl QT Lights (LED Strip)	25	1	10	0.25	
Fish QT Skimmer (Curve 5)	8	1	24	0.192	
Other					
Hydroponic Salad wall lights (DIY LED)	225	1	16	3.6	
Circulation Pump (RO Varios 8)	50	1	12	0.6	
Microgreens Light (Agrow 48" LED)	82	1	16	1.312	
			Per Day total	15.131	KwH
			12 Month Baseline Annual	**3016**	**KwH**
			2018 Aquarium & Other (3 months)	**1380.7038**	**KwH**
			2018 Total KwH Per Year	**4396.7038**	**KwH**

2019	wattage	Power Factor	hours/day	KwH/Day	
Aquarium Display Tank (DT)					
DT Return Pump (RO Varios 8)	100	1	24	2.4	
DT Protein Skimmer (SRO 6000EXT)	45	1	21	0.945	
DT Skimmer Feed (Sicce 4.0)	50	1	21	1.05	
DT Gyres Circulation (2x Gyre 250)	50	1	24	1.2	
DT Kessil 360we (x6)	400	1	11	4.4	
DT DIY LED (390-520nm LEDs)	100	1	11	1.1	
DT 4x80 watt (Miro T5)	320	1	7	2.24	
DT Fuge DIY LED Lights (440/660nm)	60	1	16	0.96	
DT Finnex 500 watt heaters (2)*	1000	1	10	10	
DT Backup Finnex 500 watt heaters (1)*	500	1	4	2	
Bio pellet reactor pump (Sicce 2.0)	35	1	24	0.84	
Dehumidifier** (Frigidaire 70-Pint)	745	1	6	4.47	
Fishroom Ceiling Fan	35	1	24	0.84	
			Per Day total	32.445	KwH
			12 Month Baseline Annual	**3016**	**KwH**
			2018 Aquarium & Other (12 months)	**5522.815**	**KwH**
			2019 Aquarium (9 months)	**8857.485**	**KwH**
			2019 Total KwH Per Year	**17396.3**	**KwH**

2020	wattage	Power Factor	hours/day	KwH/Day	
Aquarium					
Frag Feed Pump (RO Varios 8)	75	1	24	1.8	
Frag Kessil AP700 (x6)	800	1	11	8.8	
Frag 54w 48" T5x12 (Miro T5)	650	1	11	7.15	
Gyre Circulation Pump (Gyre 250 x6)	150	1	24	3.6	
Calcium Reactor Pump (Sicce 2.0)	35	1	24	0.84	
			Per Day total	22.19	KwH
			12 Month Baseline Annual	**3016**	**KwH**
			2018 Aquarium & Other	**5522.815**	**KwH**
			2019 Aquarium (12 months)	**11842.425**	**KwH**
			2020 Aquarium (9 months)	**6057.87**	**KwH**
			2020 Total KwH Per Year	**26439.11**	**KwH**

* Heating requirements are projections, and may shift based on thermal transfer from submerged pumps, ambient air temps, and as water volume in the system increases. Heating requirements during the summer may be replaced with cooling requirements, from a room AC or water chiller with similar loads.
** Dehumidification requirements are projections, and may change based on evaporation rates

Signed By:

Electrician License #:

Date:

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** Dehumidification requirements are projections, and may change based on evaporation rates
*** 3 months projections for 2018 based on quarantine system going on line in September.
9 month projections for 2019 & 2020 based on rolling install of equipment - not all equipment will be in place and running January 1st.

Signed By:

Print Name:

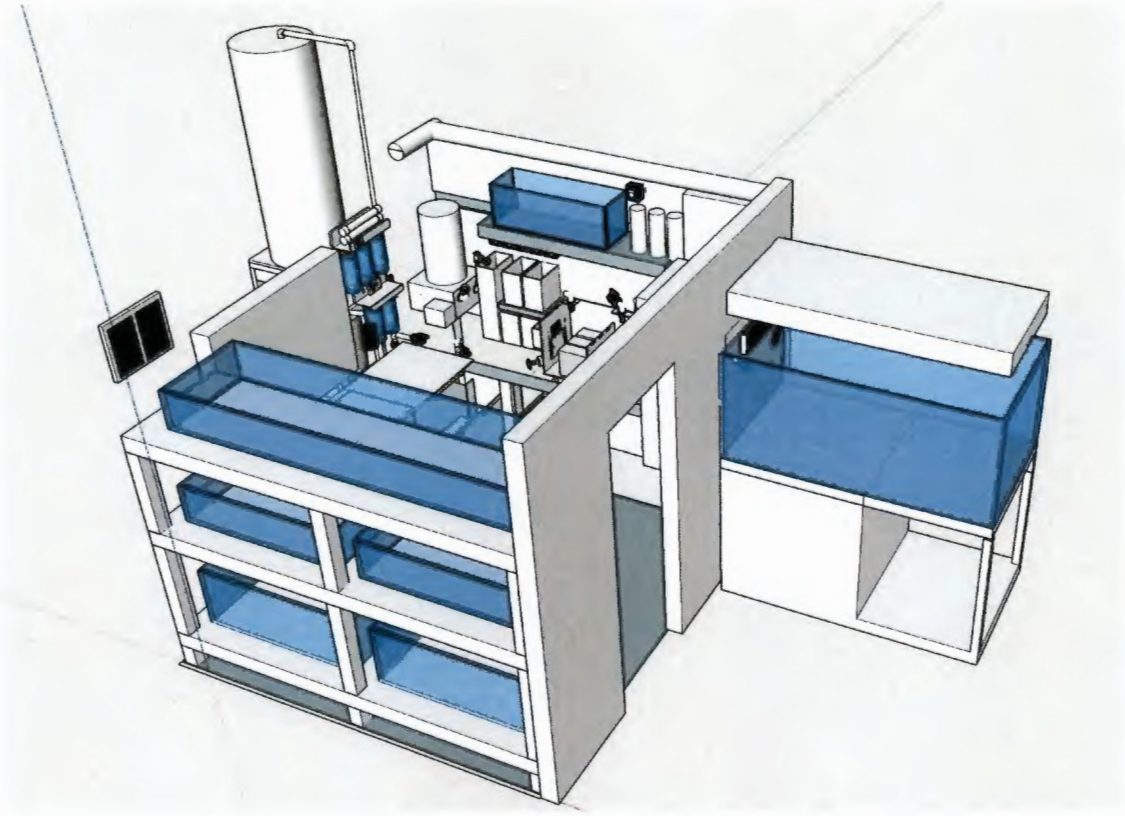
Signature

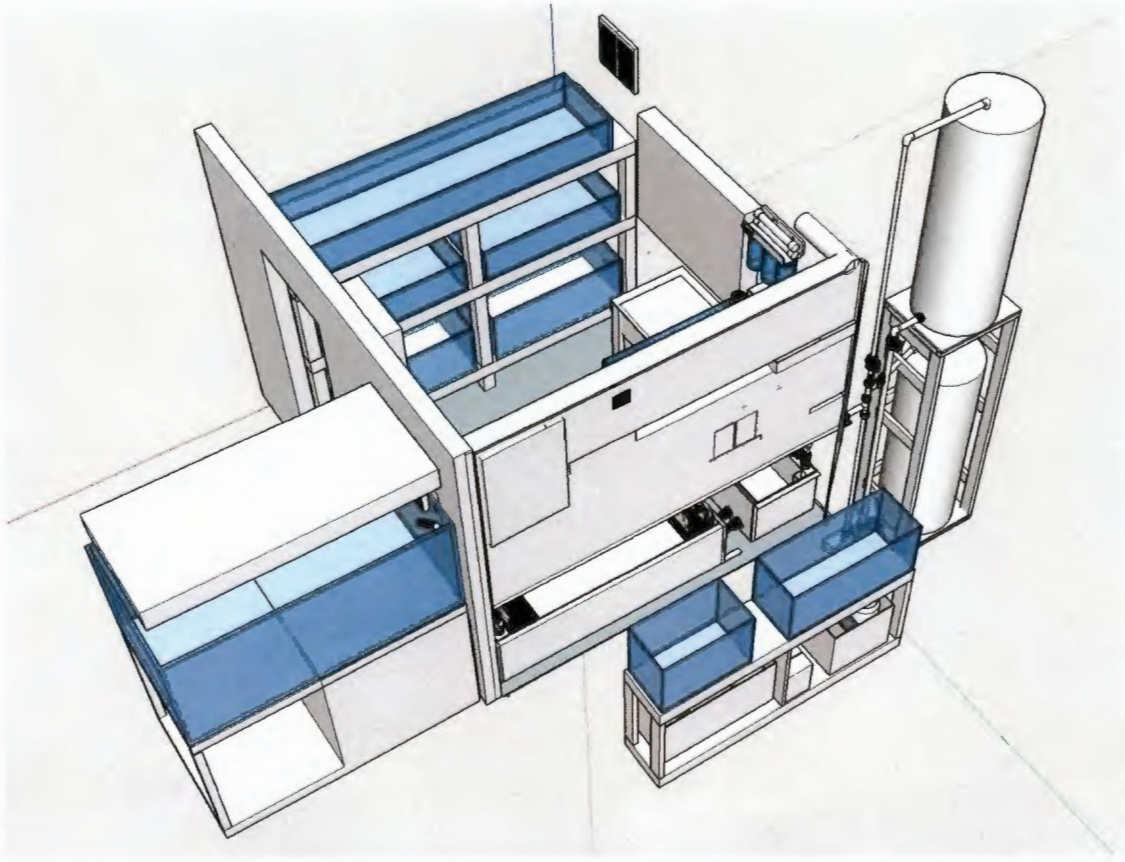
Electrician License #:

Date:

Outline of main display tank. Fish room door to left, quarantine system to right. Inset of system design, matching real-world perspective.

System Design, showing main display tank, coral aquaculture and filter room, quarantine sub-systems (photos following), and two-tier saltwater mixing station (photos following).





Fish and Coral Quarantine (Fish/Coral QT) System already built

Aquarium system equipment already purchased and in-hand (and covered in drywall dust!)

Seven stage reverse osmosis deionization water filter, 110 gallon saltwater mixing tanks, and mixing station stand.

Controllers and sensors for installed quarantine system. This is for two 30 gallon tanks, whereas the main system will be over 800 gallons in 6 tanks.